

What is claimed is:

- 1                   1.       A redundant power distribution system having a plurality  
2 of distribution lines comprising:  
3                   a plurality of regulators;  
4                   a plurality of isolation transformers coupled to said plurality of  
5 regulators and having a plurality of isolation boundaries; and  
6                   at least one R(M/N) device circuit coupled to said plurality of  
7 isolation transformers where M of the N elements are required so that the  
8 system operates properly;  
9                   said plurality of regulators and isolation transformers having a  
10 non-feedback looped configuration across said plurality of isolation boundaries.
- 1                   2.       A system as in claim 1 wherein said at least one R(M/N)  
2 device circuit comprises a plurality of distribution switches.
- 1                   3.       A system as in claim 1 wherein said plurality of  
2 regulators are primary regulators.
- 1                   4.       A system as in claim 3 wherein said at least one R(M/N)  
2 device circuit comprises a plurality of secondary regulators.
- 1                   5.       A redundant regulator circuit for a redundant power  
2 distribution system comprising a plurality of regulators having a plurality of  
3 source inputs and a common output.
- 1                   6.       A circuit as in claim 5 wherein said plurality of regulators  
2 comprise a plurality of output adjustments.
- 1                   7.       A circuit as in claim 6 wherein said plurality of output  
2 adjustments adjust voltage on said common output.

1                   8.     A circuit as in claim 5 wherein said plurality of regulators  
2     comprise:  
3                   a first regulator having a first input and a first output; and  
4                   a second regulator having a second input and a second output  
5     that is coupled to said first output.

1                   9.     A redundant power distribution system comprising:  
2                   a plurality of primary regulators;  
3                   a plurality of isolation transformers electrically coupled to said  
4     plurality of primary regulators;  
5                   at least one redundant regulator circuit electrically coupled to  
6     said plurality of isolation transformers; and  
7                   a plurality of secondary regulators.

1                   10.    A system as in claim 9 wherein said plurality of primary  
2     regulators comprises at least one controller comparing a primary voltage with a  
3     reference voltage and generating an error signal, said controller adjusting  
4     voltage output of said plurality of isolation transformers in response to said  
5     error signal.

1                   11.    A system as in claim 9 wherein said at least one  
2     redundant regulator circuit comprises at least a portion of said plurality of  
3     secondary regulators.

1                   12.    A system as in claim 9 wherein said is a single integral  
2     unit.

1                   13.    A system as in claim 9 wherein said plurality of  
2     secondary regulators have a common output.

1                   14. A system as in claim 9 wherein said at least one  
2 redundant regulator circuit is electrically coupled to each of said plurality of  
3 isolation transformers.

1                   15. A system as in claim 9 wherein said at least one  
2 redundant regulator circuit comprises:

3                   a first redundant regulator circuit coupled to a first isolation  
4 transformer and to a second isolation transformer; and

5                   a second redundant regulator circuit coupled to said first  
6 isolation transformer and to said second isolation transformer.

1                   16. A system as in claim 15 wherein said at least one  
2 redundant regulator circuit comprises a third redundant regulator circuit coupled  
3 to said first isolation transformer and to said second isolation transformer.

1                   17. A system as in claim 9 further comprising at least one  
2 distribution switch electrically coupled to said plurality of primary regulators.

1                   18. A system as in claim 17 wherein said at least one  
2 distribution switch comprises:

3                   a first distribution switch electrically coupled to a first primary  
4 regulator of said plurality of primary regulators; and

5                   a second distribution switch electrically coupled to a second  
6 primary regulator of said plurality of primary regulators.

1                   19. A redundant power distribution system comprising:

2                   a plurality of power sources;

3                   a plurality of converters electrically coupled to said power  
4 sources, having a plurality of outputs, and comprising;

5 at least one regulator; and  
6 at least one isolation transformer; and  
7 at least one output distribution switch electrically coupled to said  
8 plurality of outputs.

1 20. A system as in claim 19 wherein said at least one output  
2 distribution switch comprises:

3 a first output distribution switch electrically coupled to a first  
4 converter and to a second converter; and

5 a second output distribution switch electrically coupled to said  
6 first converter and to said second converter.

1 21. A system as in claim 20 wherein said at least one output  
2 distribution switch comprises a third output distribution switch electrically  
3 coupled to said first converter and to said second converter.

1 22. A system as in claim 19 further comprising at least one  
2 input distribution switch electrically coupled to said plurality of power sources  
3 and said plurality of converters.

1 23. A system as in claim 22 wherein said at least one input  
2 distribution switch comprises:

3 a first input distribution switch electrically coupled to a first  
4 source and to a second source; and

5 a second input distribution switch electrically coupled to said  
6 first source and to said second source.

1 24. A system as in claim 23 wherein said first input  
2 distribution switch is coupled to a first converter and said second input  
3 distribution switch is coupled to a second converter.

1                   25.    A system as in claim 22 wherein said at least one input  
2   distribution switch when in an ON state supplies power from said plurality of  
3   power sources to a converter.

1                   26.    A method of redundantly supplying and distributing  
2   power from a plurality of power sources to a plurality of loads comprising:  
3                   coarsely regulating power received from a plurality of power  
4   sources;  
5                   isolating said coarsely regulating power from power received by  
6   at least one redundant regulator circuit; and  
7                   finely regulating said power received by at least one redundant  
8   regulator circuit to generate a plurality of redundant power outputs.

1                   27.    A method as in claim 26 further comprising combining  
2   said plurality of redundant power outputs.